U.S. Environmental Protection Agency
Region 2

Response Action Contract

DRAFT
REMEDIAL ALTERNATIVE EVALUATION TECHNICAL MEMORANDUM FOR OPERABLE UNIT 2 (OU-2) ON-SITE SOILS AND BUILDINGS CORNELL-DUBILIER ELECTRONICS SUPERFUND SITE SOUTH PLAINFIELD MIDDLESEX COUNTY, NEW JERSEY

MAY 2003

Contract No: 68-W-98-214

FOSTER WHEELER
FOSTER WHEELER ENVIRONMENTAL CORPORATION

EPA WORK ASSIGNMENT NUMBER: 018-RICO-02GZ
EPA CONTRACT NUMBER: 68-W-98-214
FOSTER WHEELER ENVIRONMENTAL CORPORATION
RAC II PROGRAM

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MAY 2003

FOSTER WHEELER ENVIRONMENTAL CORPORATION

8 May 2003
RAC II-2003-083

Mr. Pietro Mannino
Work Assignment Manager
U.S. Environmental Protection Agency
290 Broadway, 19th Floor
New York, NY 10007-1866

**SUBJECT: USEPA RAC II CONTRACT NUMBER: 68-W-98-214
WORK ASSIGNMENT NUMBER: 018-RICO-02GZ
CORNELL-DUBILIER ELECTRONICS SUPERFUND SITE
DRAFT REMEDIAL ALTERNATIVE EVALUATION TECHNICAL MEMORANDUM FOR OPERABLE UNIT 2 (OU-2), ON-SITE SOILS AND BUILDINGS**

Dear Mr. Mannino:

Foster Wheeler Environmental Corporation (Foster Wheeler Environmental) is pleased to provide three copies of the subject report for your review.

Please contact me at (973) 630-8356 or lniles@fwenc.com if you have questions regarding any aspect of this submittal.

Sincerely,

Lynn E Niles

Lynn Niles
Acting Project Manager

Enclosure:

cc: W. Colvin (w/o enclosure)
T. Sutherland (w/o enclosure)

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EPA WORK ASSIGNMENT NUMBER: 018-RICO-02GZ
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MAY 2003

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1.0 INTRODUCTION

Foster Wheeler Environmental Corporation (Foster Wheeler Environmental) has prepared this Remedial Alternative Evaluation Technical Memorandum (Evaluation Technical Memorandum) for Operable Unit 2 (OU-2), On-Site Soils and Buildings for the Cornell-Dubilier Electronics Superfund Site (the site) located in South Plainfield, Middlesex County, New Jersey. This Evaluation Technical Memorandum was prepared for the United States Environmental Protection Agency (EPA), Region 2, in accordance with the Statement of Work for Work Assignment Number 018-RICO-02GZ, under EPA Contract Number 68-W-98-214. The purpose of this Evaluation Technical Memorandum is to present a detailed description and assessment of the remedial alternatives for on-site soils and buildings. Based on EPA's comments on the "Remedial Alternative Screening Technical Memorandum for Operable Unit 2 (OU-2), On-Site Soils and Buildings" (Foster Wheeler Environmental, 2003), the alternatives presented therein were modified as follows: limited action for soil was eliminated; capping as a stand-alone alternative was eliminated; partial excavation and capping was added; soil vapor extraction and capping was added; low temperature thermal desorption and capping was added; and, building decontamination and encapsulation were combined into a single remedial alternative.

Each remedial alternative was examined with respect to the requirements stipulated in the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as amended by the Superfund Amendments and Reauthorization Act (SARA). The following EPA documents were used in the preparation of this Evaluation Technical Memorandum: "Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA" (1988), and "Revised Handbook for Remedial Action at Waste Disposal Sites" (1985).

Section 1.0 provides the introduction for this Evaluation Technical Memorandum. Section 2.0 discusses the evaluation process and the criteria against which the remedial alternatives were evaluated. Section 3.0 presents a detailed description of the alternatives and the evaluation of each alternative with respect to the evaluation criteria. Section 4.0 summarizes the comparative analysis of remedial alternatives.

2.0 EVALUATION PROCESS

The detailed analysis of remedial alternatives includes the following steps:

- The first step is to further define each alternative with respect to the volumes and/or areas of contaminated media to be addressed, the remedial technologies to be used, and any performance requirements associated with those technologies;
- In the next step, each alternative is evaluated against seven of nine evaluation criteria as defined by the EPA RI/FS Guidance Document (EPA, 1988); and
- Finally, a comparative analysis of the remedial alternatives to assess the relative performance of each alternative with respect to each evaluation criterion is performed.

Based on the statutory preferences and the remedial response objectives developed in the "Remedial Alternative Screening Technical Memorandum for Operable Unit 2 (OU-2), On-Site Soils and

Buildings," Cornell-Dubilier Electronics site, January 2003 (Cornell-Dubilier Screening Technical Memorandum), remedial alternatives were developed to meet the following requirements:

- Protection of human health and the environment (CERCLA Section 121 (b));
- Attainment of applicable or relevant and appropriate requirements (ARARs) of federal and state laws (CERCLA Section 121(d)(2)(A) to the maximum extent practicable, or warranting a waiver under CERCLA Section 121(d)(4));
- Provision of a cost-effective solution, taking into consideration short- and long-term costs (CERCLA Section 121(a));
- Use of permanent solutions and treatment technologies or resource recovery technologies to the maximum extent practicable (CERCLA Section 121(b)); and
- Satisfaction of the preference for remedies that employ treatments that permanently and significantly reduce the toxicity, mobility, or volume of hazardous substances as a principal element, or explanation of reasons why such remedies were not selected (CERCLA Section 121(b)).

In order to address the CERCLA requirements, EPA developed nine criteria for the evaluation of alternatives. These criteria are discussed and defined in the EPA Guidance Document (October 1988).

The first two criteria are the "threshold" factors. Any alternative that does not satisfy both of these criteria is eliminated from further consideration in the detailed analysis, with the exception of the No Action alternative, which is required by CERCLA to be carried through the entire evaluation process. The two threshold criteria are:

- Overall protection of human health and the environment; and
- Compliance with ARARs.

Five "primary balancing" criteria are used to make comparisons and to identify the major tradeoffs between the remedial alternatives. Alternatives that satisfy the threshold criteria are evaluated further using the following primary balancing criteria:

- Long-term effectiveness;
- Reduction of toxicity, mobility, or volume through treatment;
- Short-term effectiveness;
- Implementability; and
- Cost.

The remaining two criteria are "modifying" factors that are not addressed in this Evaluation Technical Memorandum but will be evaluated later in the Feasibility Study (FS) process. These two criteria are:

- State acceptance; and
- Community acceptance.

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A discussion of the first seven evaluation criteria is presented below. In Section 3.0, the analysis of each remedial alternative with respect to these seven criteria is summarized. In Section 4.0, the comparative analysis of alternatives based on these seven criteria is summarized to facilitate the remedy selection process.

Overall Protection of Human Health and the Environment

This evaluation criterion provides an overall assessment of protection based on a composite of long-term and short-term effectiveness factors. Evaluation of overall protection addresses:

- How well a specific site remedial action achieves protection over time;
- How well site risks are reduced; and
- How each source of contamination is to be eliminated, reduced, or controlled for each remedial alternative.

Compliance with ARARs

This evaluation criterion is used to determine how each remedial alternative complies with applicable or relevant and appropriate federal and state requirements as defined in CERCLA Section 121. Each alternative is evaluated in detail for:

- Compliance with contaminant-specific ARARs (*e.g.*, Resource Conservation and Recovery Act (RCRA) Standards);
- Compliance with action-specific ARARs (*e.g.*, RCRA minimum technology standards);
- Compliance with location-specific ARARs (*e.g.*, preservation of historic sites); and
- Compliance with appropriate criteria, advisories, and guidances (*i.e.*, "To Be Considered (TBC)" material).

The Remedial Alternative Screening Technical Memorandum (Foster Wheeler Environmental, 2003) presented the ARARs used to evaluate the proposed remedial alternatives.

Long-Term Effectiveness

This evaluation criterion addresses the results of the remedial action in terms of the risk remaining at the site after the response objectives have been met. The components of this criterion include the magnitude of the remaining risks measured by numerical standards such as cancer risk levels; the adequacy and suitability of controls used to manage treatment residuals or untreated soils; and the long-term reliability of management controls for providing continued protection from residuals (*i.e.*, the assessment of potential failure of the technical components).

Reduction of Toxicity, Mobility, or Volume Through Treatment

This evaluation criterion addresses the statutory preference for treatment that results in the reduction of the total mass of toxic contaminants, the irreversible reduction in contaminant mobility, or the reduction of the total volume of contaminated media. Factors to be evaluated in this criterion include the treatment process employed; the amount of hazardous material destroyed or treated; the degree of reduction in toxicity, mobility, or volume expected; and the type and quantity of treatment residuals.

Short-Term Effectiveness

This evaluation criterion addresses the impacts of the remedial action during the construction and implementation phases preceding the attainment of the remedial response objectives. Factors to be evaluated include protection of workers and neighboring communities during the remedial actions, environmental impacts resulting from the implementation of the remedial actions, and the time required to achieve protection.

Implementability

This criterion addresses the technical and administrative feasibility of implementing a remedial action and the availability of services and materials required during its implementation. Technical feasibility factors include construction and operation difficulties, reliability of technology, ease of undertaking additional remedial actions, and the ability to monitor the effectiveness of the remedy. The administrative feasibility includes the ability and time required for administrative approvals and for activities needed to coordinate with other agencies. Factors employed in evaluating the availability of services and materials include availability of treatment, storage, and disposal services with required capacities; availability of equipment and specialists; and availability of prospective technologies for competitive bidding.

Cost

This criterion addresses capital costs, operation and maintenance (O&M) costs, present worth of capital and O&M costs, and potential future remedial action costs. Capital costs consist of direct and indirect costs. Direct costs include expenditures for the equipment, labor, and materials necessary to install remedial actions. Indirect costs include expenditures for engineering, financial, and other services required to complete the installation of remedial alternatives.

Annual O&M costs include labor for operation of systems and maintenance, auxiliary materials and energy, disposal of residues, purchased services, administrative costs, insurance, taxes, license costs, maintenance reserve and contingency funds, and rehabilitation costs. It is assumed that the O&M costs are incurred after the remedial activities are completed.

This assessment evaluates the costs of the remedial actions on the basis of present worth. Present worth analysis allows remedial alternatives to be compared on the basis of a single cost representing an amount that, if invested in the base year and disbursed as needed, would be sufficient to cover all costs associated with the remedial alternative over its planned lifetime. A required operating performance period is assumed for calculation present worth, which is a function of the discount rate and time. A discount rate of one percent is assumed for a base calculation. The "study estimate" costs provided for the remedial actions are intended to reflect actual costs with an accuracy of -30 to +50 percent.

3.0 ALTERNATIVE ANALYSIS

The following soil (S) and building (B) remedial alternatives that passed the initial screening process were evaluated against the threshold and primary balancing evaluation criteria. The alternatives are:

Soil Remedial Alternatives

- S-1: No Action
- S-2: Excavation/Off-Site Disposal
- S-3: "Principal Threat" Excavation/Off-Site Disposal/Multi-Layer Cap
- S-4: Soil Vapor Extraction/Multi-Layer Cap
- S-5: Solidification/Multi-Layer Cap
- S-6: Low Temperature Thermal Desorption/Multi-Layer Cap

Building Remedial Alternatives

- B-1: No Action
- B-2: Decontamination and Surface Encapsulation (*i.e.,* containment)
- B-3: Demolition/Off-Site Disposal

3.1 Alternative S-1: No Action

3.1.1 Description

In this alternative, no remedial activities or site monitoring would be performed. This alternative does not include the implementation of institutional controls. The No Action alternative provides the baseline case for comparison with other remediation alternatives for soils. As required by CERCLA, regular five-year reviews would be performed to assess the need for additional remedial actions in the future.

3.1.2 Assessment

Overall Protection of Human Health and the Environment

The No Action alternative would entail no monitoring, removal, or treatment of the soil contaminants. The contaminated soil would be left in place. The volume of contaminated soils and exposure risks would be expected to remain the same. The site stabilization measures that were previously implemented at the site would remain. However, under this alternative, there would be no maintenance of these measures. There is potential for exposure to contaminated soils. The No Action alternative would not be protective of human health and the environment.

Compliance with ARARs

The No Action alternative does not provide means of monitoring the concentrations of chemicals of potential concern (COPCs). Federal and state standards are currently exceeded for the contaminants of concern in the impacted media (Foster Wheeler Environmental, 2003). Alternative S-1 will not satisfy contaminant-specific ARARs. No Action also would not comply with action-specific ARARs for monitoring. No location-specific ARARs would be triggered by the No Action alternative.

Long-Term Effectiveness

Long-term risks associated with the No Action alternative are related to the potential baseline human health risks. These risks would still exist through the potential soil exposure pathways (i.e., ingestion, absorption, and inhalation).

As required by CERCLA, review and evaluation of site conditions would be performed every five years. If justified by the review, additional remedial actions could be required. This alternative would not be effective over the long-term because contaminated soils would remain on-site. The risks posed by contaminated media would not be mitigated.

Reduction of Toxicity, Mobility, or Volume Through Treatment

This alternative would not involve any removal, treatment, or disposal of the contaminants in the soils and as such, no reduction in toxicity, mobility, or volume through treatment would result.

Short-Term Effectiveness

The No Action alternative for soils does not include any remedial activities. Since this alternative does not involve construction activities, there are no threats to workers or the community during implementation.

Implementability

Technical Feasibility

The technical feasibility of this alternative would be very high, since no remedial activities or monitoring would be performed.

Administrative Feasibility

This alternative would require administrative coordination in performing site reviews every five years. Coordination with state and local authorities would be required in the future for making appropriate decisions with regard to additional remedial activities.

Availability of Services and Materials

No services or material would be required for this alternative.

Cost

There would be no capital or O&M costs associated with this alternative.

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3.2 Alternative S-2: Excavation/Off-Site Disposal

3.2.1 Description

This alternative consists of the excavation of the contaminated soils that exceed New Jersey Department of Environmental Protection's Impact to Groundwater Soil cleanup Criteria (IGWSCC), or Non-Residential Direct Contact Soil Cleanup Criteria (NRDCSCC), and soils containing polychlorinated byphenyls (PCBs) at concentrations greater than 10 ppm. The capacitor disposal areas would be included as part of the excavation.

Figures 4-11, 4-23, and 4-24 of the Remedial Investigation Report (Foster Wheeler Environmental, 2002) show the constituents exceeding screening criteria in soil at 0-2 feet bgs, 2-6 feet bgs, and 6-14 feet bgs, respectively. Figure 3-1 shows the impacted areas that exceed IGWSCC or NRDSCC, and soils with PCBs at concentrations greater than 10 ppm. The total impacted area is approximately 17 acres. These locations would be excavated to the required depths (approximately 2 to 14 feet). An estimated 300,000 in place cubic yards of soil would be excavated and transported off-site for proper disposal. Excavated soils would be characterized for treatment (if necessary) and off-site disposal in accordance with applicable regulations. Upon completion of the excavation work and removal of contaminated soils, the excavations would be backfilled with certified clean fill or non-contaminated on-site soils that were excavated (*i.e.,* soils excavated to reach contaminated soils at depth) and the surface would be paved and/or vegetated based on planned future uses.

Post excavation sampling would be performed to confirm that the cleanup levels have been achieved. Any action level exceedances detected during the post-excavation confirmatory sampling would result in additional excavation, treatment (if necessary), and disposal. Therefore, the quantity of soil excavated under this remedial alternative could significantly increase during the remedial construction.

3.2.2 Assessment

Overall Protection of Human Health and the Environment

The excavation and off-site disposal of contaminated soil from the site would minimize the potential human health and ecological risks associated with exposure to contaminated soils. This alternative would result in overall protection of human health and the environment. The mobility of hazardous contaminants in the site soil would also be reduced.

Compliance with ARARs

This alternative would be completed in compliance with action- and location-specific ARARs and chemical-specific ARARs for all of the COPCs except for PCBs. The cleanup goal of 10 ppm for PCBs would not comply with the EPA Soil Screening Level (SSL) for Direct Ingestion (1 mg/kg) or NRDCSCC of 2 ppm.

Long-Term Effectiveness

The excavation and off-site disposal of contaminated soil would reduce the potential human health risks associated with exposure to contaminated soils. Excavated soil would be replaced by clean materials. The site would have residual risks that are acceptable for non-residential use for all of the COPCs, except for PCBs (residual PCB concentrations will be above the NRDSCC of 2 ppm). Following remediation, the remediated area would be restored.

Reduction of Toxicity, Mobility, or Volume

This alternative would result in a significant reduction of toxicity, mobility, and volume of contamination at the site through removal and off-site disposal. If necessary, the materials would be treated at the off-site facility prior to disposal.

Short-Term Effectiveness

The potential public health threats to workers and area residents during excavation and soil handling would include direct contact with contaminated soils and inhalation of fugitive dust. The area would be secured and access would be restricted to authorized personnel only. The implementation of standard dust control measures such as wind screens and water sprays would be used, as necessary, to minimize fugitive dust emission resulting from excavation and soil handling. Air monitoring would be conducted throughout the site remediation activities to ensure the nearby community is not exposed to site-related contamination.

The health and safety program will address the measures for protection against the principal threat hazards. The risk to workers would be minimized by the use of standard health and safety practices such as enclosed cabs on excavation equipment and proper personal protective equipment (PPE) to prevent direct contact with contaminated soil and inhalation of fugitive dust.

Short-term impacts on the environment resulting from removal of vegetation and destruction of habitat in the soil would be minimal since the area has minimal vegetation and wildlife. Impacts would be temporary and would be mitigated by restoring the remediated area. Erosion control measures, such as silt fencing, would be provided during excavation activities to control migration of contaminated soil. Short-term impacts to the environment would also include increased traffic and noise, resulting from hauling soil off-site and clean fill on-site. Coordination with local authorities will be necessary to minimize impacts on local traffic patterns. Construction activities will be performed in accordance with any local noise ordinances to minimize impacts to the community.

A total period of one to two years is estimated for this remedial alternative for planning, design, and procurement. Construction work associated with this alternative is expected to take an additional one to two years.

Implementability

Technical Feasibility

All the components of this remedial alternative are well developed and commercially available. The large volumes of excavated soil designated for off-site disposal may require identification of multiple disposal facilities. If perched water is encountered during excavation of soils, dewatering may be required. This alternative would be more difficult to implement if the buildings are not removed. Excavation near and between buildings on-site may require the use of shoring and specialized equipment. Sufficient area is available at the site for staging wastes. Excavation, off-site transportation, and restoration of the site can be performed with little difficulty.

Administrative Feasibility

Implementation of this alternative would require public access restriction to the site during the remediation process. Since PCBs above NRDSCC would remain on-site, a deed notice would be required upon completion of the remedial activities.

Availability of Services and Materials

Excavation and placement of fill materials utilize common construction equipment and should not pose any implementation problems. No long-term O&M would be required.

Cost

The total capital cost for this alternative is estimated to be $131,000,000. There are no O&M costs associated with this alternative. The cost could change during remedial activities if any action level exceedances are detected during post-excavation sampling.

3.3 Alternative S-3: "Principal Threat" Excavation/Off-Site Disposal/Multi-Layer Cap

3.3.1 Description

This alternative consists of the excavation of the contaminated soils that exceed IGWSCC, soils containing PCBs at concentrations greater than 500 ppm and the capacitor disposal area. Contaminated soils containing less than 500 ppm but greater than 10 ppm PCBs will be capped by use of a multi-layer cap.

Figures 4-11, 4-23, and 4-24 of the RI Report (Foster Wheeler Environmental, 2002) show the constituents exceeding screening criteria in soil at 0-2 feet bgs, 2-6 feet bgs, and 6-14 feet bgs, respectively. The contaminated locations would be excavated to the required depths (approximately 2 to 14 feet). Figure 3-2 shows the areas that exceed IGWSCC, and soils with PCBs greater than 500 ppm. This excavation is approximately 152,000 in place cubic yards. Excavated soils will be managed as described in Alternative S-2.

Figure 3-2 also shows the areas that have soils with PCBs greater than 10 ppm but less than 500 ppm. This area, as well as the excavated area, will be capped. The total area to be capped is approximately 20 acres.

Post excavation sampling would be performed to confirm that the cleanup levels have been achieved. Any action level exceedances detected during the post-excavation confirmatory sampling would result in additional excavation, treatment, and disposal. Therefore, the remediation scope could significantly increase during the remedial construction.

A multi-layer cap system is a combination of two or more single layer capping technologies. The cap creates an impermeable layer so that water cannot filter down from the surface into the overburden, potentially allowing for the migration of contaminants. Although Figure 3-4 shows a typical cross-section for a multi-layer cap system, other designs are possible that achieve the same goals. The system in Figure 3-4 shows a six-inch topsoil layer placed over a one-foot layer of clean fill, which overlays the drainage layer. A non-woven geotextile layer is placed between the clean fill and the drainage layer. This then overlays the HDPE layer, which overlays the contaminated soil.

In some instances, contaminated soil may be reused on-site. For example, soil with contaminant concentrations below the action levels that is excavated to reach more contaminated soil at depth may be able to be reused as fill under the multi-layer cap. In this alternative, since contamination above regulatory criteria would remain on-site, controls, public awareness and education measures, five-year reviews, and long-term monitoring, would be required.

3.3.2 Assessment

Overall Protection of Human Health and the Environment

The excavation and off-site disposal of the "principal threat" contaminants from the site would mitigate the potential human health and ecological risks associated with exposure to contaminated soils. Capping of remaining contaminated soil by a multi-layer cap provides protection of human health and the environment by eliminating the soil exposure pathways for human and ecological receptors. The protection would persist only as long as the cap was actively maintained, since contaminants would remain and a breach of the cap could re-establish human and/or ecological exposure routes.

Compliance with ARARs

All activities for this alternative would be performed in accordance with location- and action-specific ARARs. Waivers would be sought, if necessary, based on technical impracticality of complying with certain ARARs. Efforts would be made to protect wetlands and endangered species, in accordance with federal and state ARARs, such as the "Protection of Wetlands Executive Order," "Wetlands Protection at Superfund Sites," the "Wetlands Act of 1970," the "Freshwater Wetlands Protection Act Rules," the "Endangered Species Act," etc. Substantive requirements of federal and state waste management regulations regarding capping of wastes would be met. This alternative may not comply with chemical-specific TBCs such as EPA SSLs and NJDEP Soil Cleanup Criteria, since contaminants are not removed to the levels specified in these criteria. It would, however, reduce exposure pathways associated with those contaminants.

Long-Term Effectiveness

The excavation and off-site disposal of contaminated soil in conjunction with the cap would reduce the potential human health and ecological risks associated with exposure to contaminated soils. Excavated soil would be replaced by clean materials.

The capping of the remaining contaminated soil (greater than 10 ppm PCBs) would minimize the human health and ecological exposure risks as long as the capped areas were maintained and future activities did not disrupt the capped areas, thereby re-establishing exposure routes. Although the cap will minimize infiltration, since the contamination is left in place, the potential still exists for migration of contaminants into groundwater and/or surface water and the establishment of new exposure routes. Long-term monitoring and a deed notice would be required for this alternative.

Reduction of Toxicity, Mobility, or Volume

This alternative would result in a reduction of toxicity, mobility, and volume through removal and off-site disposal of contaminated soil. If necessary, the materials would be treated at the off-site facility prior to disposal.

Residual contamination capped with impermeable materials (*i.e.*, the multi-layer cap) would also exhibit some reduction in mobility of contaminants via infiltration and/or erosion as long as the cap is adequately maintained.

Short-Term Effectiveness

The potential public health threats to workers and area residents during excavation and soil handling would include direct contact with contaminated soils and inhalation of fugitive dust. The area would be secured and access would be restricted to authorized personnel only. The implementation of standard dust control measures such as wind screens and water sprays would be used, as necessary, to minimize fugitive dust emission resulting from excavation and soil handling. Air monitoring would be conducted throughout the site remediation activities to ensure the nearby community is not exposed to site-related contamination.

The health and safety program will address the measures for protection against the principal threat hazards. The risk to workers would be minimized by the use of standard health and safety practices such as enclosed cabs on excavation equipment and proper PPE to prevent direct contact with contaminated soil and inhalation of fugitive dust.

Short-term impacts on the environment resulting from removal of vegetation and destruction of habitat in the soil would be minimal since the area has minimal vegetation and wildlife. Impacts would be temporary and would be mitigated by restoring the remediated area. Erosion control measures, such as silt fencing, would be provided during excavation activities to control migration of contaminated soil. Short-term impacts to the environment would also include increased traffic and noise, resulting from hauling soil off-site and clean fill on-site. Coordination with local authorities will be necessary to minimize impacts on local traffic patterns. Construction activities will be performed in accordance with any local noise ordinances to minimize impacts to the community. Excavated areas would be backfilled with clean fill or excavated soils below cleanup criteria.

A total period of one to two years is estimated for this remedial alternative for planning, design, and procurement. Construction work associated with this alternative is expected to take an additional one to two years.

<u>Implementability</u>

Technical Feasibility

All the components of this remedial alternative are well developed and commercially available. The large volumes of excavated soil designated for off-site disposal may require identification of multiple disposal facilities. If perched water is encountered during excavation of soils, dewatering may be required. This alternative would be more difficult to implement if the buildings are not removed. If excavation occurs near and between buildings, shoring and specialized equipment may be required. Sufficient area is available at the site for staging wastes. Excavation, off-site transportation, and restoration of the site can be performed with little difficulty.

Administrative Feasibility

Implementation of this alternative would require public access restriction to the site during the remediation process. Contamination above ARARs would remain on-site, and a deed notice would be required upon completion of the remedial activities. These restrictions could require the cooperation of and/or negotiations with current and/or future property owners. The large volume of soil excavated may require multiple disposal facilities.

Availability of Services and Materials

Excavation and placement of fill materials utilize common construction equipment and should not pose any implementation problems. Careful planning and coordination would be required to ensure that adequate quantities of material are available for efficient implementation of this alternative because of the large quantities required. Numerous contractors are available for construction and for O&M activities for the multi-layer cap.

<u>Cost</u>

The capital cost for this alternative would be approximately $88,000,000. The annual maintenance cost for the 20-acre cap would be approximately $640,000. The present worth, calculated at a discount rate of 1 percent over a 30-year period would be approximately $104,000,000.

3.4 Alternative S-4: Soil Vapor Extraction/Multi-Layer Cap

3.4.1 Description

In order to address volatile organic compounds (VOCs) above IGWSCC, this alternative includes installation of a soil vapor extraction (SVE) system. Figure 3-3 shows the approximate area where IGWSCC are exceeded, which would also be the location for the SVE system. The area is approximately 6.7 acres, with a volume of 152,000 in place cubic yards. This alternative also includes placement of a multi-layer cap of approximately 20 acres. Figure 3-2 shows the impacted areas that exceed IGWSCC, and soils with PCBs greater than 10 ppm. This impacted area would also be the approximate location of the cap. This alternative also encompasses the excavation of the capacitor disposal area and off-site disposal of approximately 7,500 cubic yards of soil and debris found therein. These areas are shown in Figure 3-5. Any additional capacitors found during remedial activities (e.g., regrading) will also be disposed off-site.

3.4.2 Assessment

Overall Protection of Human Health and the Environment

Removal of VOCs by SVE and capping of contaminated soil (i.e., PCBs greater than 10 ppm and other COPCs greater than IGWSCC) provides protection of human health and the environment by eliminating the soil exposure pathways for human and ecological receptors. The protection due to capping would persist only as long as the cap is actively maintained, since contaminants would remain and a breach of the cap could re-establish human and/or ecological exposure routes.

Compliance with ARARs

All activities for this alternative would be performed in accordance with location and action-specific ARARs. Waivers would be sought, if necessary, based on technical impracticality of complying with certain ARARs. Efforts would be made to protect wetlands and endangered species, in accordance with state and federal ARARs, such as the "Protection of Wetlands Executive Order," "Wetlands Protection at Superfund Sites," the "Wetlands Act of 1970," the "Freshwater Wetlands Protection Act Rules," the "Endangered Species Act," etc. Substantive requirements of federal and state waste management regulations regarding capping of wastes would be met. This alternative would not comply with chemical-specific TBCs such as EPA SSLs and NJDEP Soil Cleanup Criteria, since contaminated soil is not removed or fully treated. It would, however, eliminate exposure pathways associated with those contaminants.

Long-Term Effectiveness

Capping of contaminated soil would eliminate the human health and ecological exposure risks as long as the capped areas were maintained and future activities did not disrupt the capped areas, thereby re-establishing exposure routes. The SVE system will reduce the concentration of certain contaminants (i.e., VOCs) in the soil and the cap will minimize infiltration; however, since contamination will remain, the potential exists for migration of contaminants into groundwater and/or surface water and the establishment of new exposure routes. Long-term monitoring and a deed notice would be required for this alternative.

Reduction of Toxicity, Mobility, or Volume

This alternative would result in a reduction of toxicity, mobility, and volume through treatment by the SVE system and excavation of the capacitor disposal areas. Areas that are not treated but are capped with impermeable materials (*i.e.*, multi-layer cap) would exhibit some reduction in mobility of contaminants via infiltration and/or erosion, as long as the cap is adequately maintained.

Short-Term Effectiveness

During implementation of this alternative, the health and safety program will address the measures for protection against the principal threat hazards to which workers could potentially be exposed. This risk would be minimized by use of standard health and safety practices, such as appropriate PPE, to prevent contact and inhalation. There is also the potential for nearby populations to be exposed to contaminated material and/or fugitive dust. The facility would be secured during construction activities to prevent unauthorized access, and fugitive dust should be minimal, since a limited area (i.e., capacitor disposal area) would be disturbed during implementation. Cap materials would be certified as non-contaminated. The implementation of standard precautions would be used during site preparation (*e.g.*, clearing and grubbing) and cap installation in order to minimize dust.

Short-term impacts to the environment would also include increased traffic and noise, resulting from importing cover material from an off-site source and disturbance of vegetated areas. Coordination with local authorities will be necessary to minimize impacts on local traffic patterns. Construction activities will be performed in accordance with any local noise ordinances to minimize impacts to the community.

Planning, design, and procurement of resources for this alternative would take approximately one to two years. Construction work associated with the containment alternative is estimated to take an additional one to two years.

Implementability

Technical Feasibility

All the components of this alternative are well developed and commercially available. Excavation, capping and SVE are easily implementable technologies. SVE would require a pilot test for design and O&M parameters. Long-term monitoring and maintenance would also be required. This alternative would be more difficult to implement if the buildings are not removed.

Administrative Feasibility

Implementation of this alternative would require restrictions on site access during construction. Since contamination would remain on-site, a deed notice would be required. These restrictions could require the cooperation of and/or negotiations with current and/or future property owners.

Availability of Services and Materials

Construction services for cap construction are readily available as these represent conventional construction activities. Materials for capping are also available. Careful planning and coordination would be required to ensure that adequate quantities of material are available for efficient implementation of this alternative because of the large quantities required. Numerous contractors are available for construction and for O&M activities for the multi-layer cap. SVE services are also readily available.

Cost

The capital costs, which includes two years of O&M for the SVE system, would be approximately \$35,000,000. The annual maintenance cost of the 20-acre multi-layer cap would be approximately \$640,000. The present worth, calculated at a discount rate of 1 percent over a 30-year period would be approximately \$52,000,000.

3.5 Alternative S-5: Solidification/Multi-Layer Cap

3.5.1 Description

This alternative consists of the solidification of soils that exceed IGWSCC, and soils with PCBs at concentrations greater than 500 ppm, which is approximately 152,000 in place cubic yards of soil. These areas are shown in Figure 3-2. This alternative also consists of the placement of an approximate 20-acre multi-layer cap as described in Alternative S-3, with the excavation of approximately 7,500 in place cubic yards of soil and debris from the capacitor disposal areas (Figure 3-5).

Solidification physically binds or encloses contaminants within a stabilized mass, thereby reducing their mobility. This alternative considers two commonly used *in situ* solidification systems: auger/caisson systems and injector head systems. Both techniques apply solidification agents to soils to trap or immobilize contaminants. Field pilot testing to determine the appropriate solidification agents, dosage rates, and other performance parameters would be needed for final design.

3.5.2 Assessment

Overall Protection of Human Health and the Environment

Capping of contaminated soil (i.e., PCBs greater than 10 ppm and other COPCs greater than IGWSCC) with a multi-layer cap provides protection of human health and the environment by eliminating the soil exposure pathways for human and ecological receptors. The protection would persist only as long as the cap is actively maintained, since contaminants would remain and a breach of the cap could re-establish human and/or ecological exposure routes. The areas where solidification of contaminated soil is performed would reduce the potential human health and ecological risks associated with exposure to those contaminated soils.

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Compliance with ARARs

All activities for this alternative would be performed in accordance with location- and action-specific ARARs. Waivers would be sought, if necessary, based on technical impracticality of complying with certain ARARs. Efforts would be made to protect wetlands and endangered species, in accordance with federal and state ARARs, such as the "Protection of Wetlands Executive Order", "Wetlands Protection at Superfund Sites," the "Wetlands Act of 1970," the "Freshwater Wetlands Protection Act Rules," the "Endangered Species Act," etc. Substantive requirements of federal and state waste management regulations regarding capping of wastes would be met. This alternative would not comply with chemical-specific TBCs such as EPA SSLs and NJDEP Soil Cleanup Criteria, since contaminated soil is not removed to the levels specified in these criteria. It would, however, reduce exposure pathways associated with those contaminants.

Long-Term Effectiveness

The solidification of contaminated soil reduces the potential for migration of contaminants into the groundwater and/or surface water. The capping would eliminate human health and ecological exposure risks as long as the capped areas were maintained and future activities did not disrupt the capped areas, thereby re-establishing exposure routes. Solidification and capping will significantly reduce contaminant migration; however, the potential continues to exist for migration of contaminants into groundwater and/or surface water and the establishment of new exposure routes. Long-term monitoring and a deed notice would be required for this alternative. These restrictions could require the cooperation of and/or negotiations with current and/or future property owners.

Reduction of Toxicity, Mobility or Volume

This alternative would result in a reduction of mobility, but an increase in volume through solidification. Areas capped with impermeable materials (*i.e.*, multi-layer cap) may exhibit further reduction in mobility of contaminants via infiltration and/or erosion, if the cap is adequately maintained.

Short-Term Effectiveness

During implementation of this alternative, the health and safety program will address the measures for protection against the principal threat hazards to which workers could potentially be exposed. This risk would be minimized by the use of standard health and safety practices, such as appropriate PPE, to prevent contact and inhalation. There is also the potential for nearby populations to be exposed to contaminated material and/or fugitive dust. The facility would be secured during construction activities to prevent unauthorized access, and the implementation of standard dust control measures such as wind screens and water sprays would be used, as necessary, to minimize fugitive dust emission resulting from remediation efforts. Erosion control measures, such as silt fencing, would be provided during excavation activities to control migration of contaminated soil. Air monitoring would be conducted throughout the site remediation activities to ensure the nearby community is not exposed to site-related contamination.

Short-term impacts on the environment resulting from removal of vegetation and disturbance of habitat in the soil would be minimal since the site has minimal vegetation. Impacts would be temporary and would be mitigated by restoring the remediated area. Trees/shrubs would be permanently removed from areas that are capped and replaced with grass. Wildlife displacement may occur during construction activities; however, this would be temporary, and any displaced species would be expected to return after completion of site activities.

Other short-term impacts to the environment would be due to potential fugitive emissions during handling of excavated soil (capacitor disposal area and if *ex situ* solidification is used) and increased traffic and noise, resulting from hauling soil/debris, clean fill, and capping materials. Coordination with local authorities will be necessary to minimize impacts on local traffic patterns. Construction activities will be performed in accordance with any local noise ordinances to minimize impacts to the community.

A total period of one to two years is estimated for this remedial alternative for planning, design, and procurement. Construction work associated with this alternative is expected to take an additional one to two years.

Implementability

Technical Feasibility

All the components of this alternative are well developed and commercially available. Five-year reviews would be required for this alternative, as contamination would remain after capping and stabilization. Stabilization would require a treatability study, and could be readily implemented if all buildings are removed. This alternative would be more difficult to implement if the buildings are not removed.

Administrative Feasibility

Implementation of this alternative would require access restrictions to the site during the remediation process. Contamination above ARARs would remain on-site and a deed notice would be required. These restrictions could require the cooperation of and/or negotiations with current and/or future property owners.

Availability of Services and Materials

Stabilization processes are well demonstrated and require conventional materials handling equipment. They are available competitively from a number of vendors, and most reagents and additives are also widely available and relatively inexpensive industrial commodities. Careful planning and coordination would be required to ensure that adequate quantities of material are available for efficient implementation of this alternative because of the large quantities required. Numerous contractors are available for construction and for O&M activities for the multi-layer cap.

Cost

For cost purposes, *in situ* solidification is assumed. The capital costs would be approximately $37,000,000. The annual maintenance cost of the 20-acre multi-layer cap would be approximately $640,000. The present worth, calculated at a discount rate of 1 percent over a 30-year period would be approximately $53,000,000.

3.6 Alternative S-6: Low Temperature Thermal Desorption/Multi-Layer Cap

3.6.1 Description

This alternative consists of the thermal desorption of approximately 152,000 in place cubic yards of soil that exceed IGWSCC and soils with PCBs at concentrations greater than 500 ppm (Figure 3-2), the capping of approximately 20 acres of contaminated soils by placement of a multi-layer cap as described in Alternative S-3, and the excavation and off-site disposal of approximately 7,500 in place cubic yards of contaminated soil and debris from the capacitor disposal areas (Figure 3-5).

Low temperature thermal desorption (LTDD) is a physical separation process that is not specifically designed to destroy organics. Wastes are heated to volatilize water and organic contaminants. A carrier gas or vacuum system transports volatilized water and organics to a gas treatment system. The bed temperatures and residence times designed into these systems will volatilize selected contaminants but will typically not oxidize them.

This alternative considers two common thermal desorption designs: the rotary dryer and thermal screw. Rotary dryers are horizontal cylinders that can be indirect- or direct-fired. The dryer is normally inclined and rotated. For the thermal screw units, screw conveyors or hollow augers are used to transport the medium through an enclosed trough. Hot oil or steam circulates through the auger to indirectly heat the medium. All thermal desorption systems require treatment of the off-gas to remove particulates and contaminants. Particulates are removed by conventional particulate removal equipment, such as wet scrubbers or fabric filters. Contaminants are removed through condensation followed by carbon adsorption, or they are destroyed in a secondary combustion chamber or a catalytic oxidizer.

3.6.2 Assessment

Overall Protection of Human Health and the Environment

Thermal desorption of contaminated soil would eliminate the potential human health and ecological risks associated with organic contaminants in the soils. Containment of contaminated soil by a multi-layer cap provides protection of human health and the environment by eliminating the soil exposure pathways for human and ecological receptors. The protection would persist only as long as the cap was actively maintained, since contaminants would remain and a breach of the cap could re-establish human and/or ecological exposure routes.

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Compliance with ARARs

All activities for this alternative would be performed in accordance with location- and action-specific ARARs. Waivers would be sought, if necessary, based on technical impracticality of complying with certain ARARs. Efforts would be made to protect wetlands and endangered species, in accordance with federal and state ARARs, such as the "Protection of Wetlands Executive Order," "Wetlands Protection at Superfund Sites," the "Wetlands Act of 1970," the "Freshwater Wetlands Protection Act Rules," the "Endangered Species Act," etc. Substantive requirements of federal and state waste management regulations regarding capping of wastes would be met. This alternative would not comply with chemical-specific TBCs such as EPA SSLs and NJDEP Soil Cleanup Criteria, since contaminated soil is not removed to the levels specified in these criteria. It would, however, reduce exposure pathways associated with those contaminants.

Long-Term Effectiveness

The thermal desorption of contaminated soil would reduce the potential human health risks associated with exposure to contaminated soils. The capping of remaining contaminated soil would eliminate the human health and ecological exposure risks, as long as the capped areas were maintained and future activities did not disrupt the capped areas, thereby re-establishing exposure routes. LTDD and capping will significantly reduce contaminant migration; however, the potential continues to exist for migration of contaminants into groundwater and/or surface water and the establishment of new exposure routes. Therefore, long-term monitoring and a deed notice would be required for this alternative.

Reduction of Toxicity, Mobility or Volume

This alternative would result in a reduction of toxicity, mobility, and volume through treatment. Soils that undergo thermal desorption would exhibit a significant reduction in contaminant toxicity and mobility. Areas capped with impermeable materials (*i.e.*, multi-layer cap) may also exhibit further reduction in mobility of contaminants via infiltration and/or erosion, if the cap is adequately maintained.

Short-Term Effectiveness

During implementation of this alternative, the health and safety program will address the measures for protection against the principal threat hazards to which workers could potentially be exposed. This risk would be minimized by use of standard health and safety practices, such as appropriate PPE, to prevent contact and inhalation. There is also the potential for nearby populations to be exposed to contaminated material and/or fugitive dust. The facility would be secured during construction activities to prevent unauthorized access, and the implementation of standard dust control measures such as wind screens and water sprays would be used, as necessary, to minimize fugitive dust emission resulting from remediation efforts. Air monitoring would be conducted throughout the site remediation activities to ensure the nearby community is not exposed to site-related contamination.

Short-term impacts on the environment resulting from removal of vegetation and disturbance of habitat in the soil would be minimal since the site has minimal vegetation. Impacts would be temporary and would be mitigated by restoring the remediated area. Wildlife displacement may occur during construction activities; however, this would be temporary and any displaced species would be expected to return after completion of site activities. Erosion control measures, such as silt fencing, would be provided during excavation activities to control migration of contaminated soil.

Short-term impacts to the environment would also include increased traffic and noise, resulting from handling soil, soils for treatment and clean fill on-site. Coordination with local authorities will be necessary to minimize impacts on local traffic patterns. Construction activities will be performed in accordance with any local noise ordinances to minimize impacts to the community.

A total period of one to two years is estimated for this remedial alternative for planning, design, and procurement. Construction work associated with this alternative is expected to take an additional two to three years.

Implementability

Technical Feasibility

All the components of this alternative are well developed and commercially available. A pilot test would be required for thermal desorption. Five-year reviews would be required for this alternative, as contamination would remain after thermal desorption and capping. This alternative would be more difficult to implement if the buildings are not removed.

Administrative Feasibility

Implementation of this alternative would require approvals for on-site thermal desorption and access restriction to the site during the remediation process. Contamination above ARARs would remain on-site and a deed notice would be required. These restrictions could require the cooperation of and/or negotiations with current and/or future property owners.

Availability of Services and Materials

Thermal desorption and capping processes are well demonstrated and use conventional materials handling equipment. They are available competitively from a number of vendors. Careful planning and coordination would be required to ensure that adequate quantities of material are available for efficient implementation of this alternative because of the large quantities required. Numerous contractors are available for construction and for O&M activities for the multi-layer cap.

Cost

The capital costs would be approximately $104,000,000. The annual maintenance cost of the 20-acre multi-layer cap would be approximately $640,000. The present worth, calculated at a discount rate of 1 percent over a 30-year period would be approximately $121,000,000.

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3.7 Alternative B-1: No Action

3.7.1 Description

In this alternative, no remedial activities or site monitoring would be performed. This alternative does not include the implementation of institutional controls. The No Action alternative provides the baseline case for comparison with other remediation alternatives for the buildings. As required by CERCLA, regular five-year reviews would be performed to assess the need for additional remedial actions in the future.

3.7.2 Assessment

Overall Protection of Human Health and the Environment

The No Action alternative would entail no monitoring, removal, or treatment of the contaminated buildings. Buildings would be left in their current condition, and contaminant concentrations would be expected to remain the same. This alternative will not reduce the risk of human exposure to contaminants through ingestion, inhalation, and dermal contact. Additional migration of contaminants could occur over time as a result of disturbance by humans and natural processes.

Compliance with ARARs

The No Action alternative does not provide a means of monitoring the concentrations of COPCs. Federal and state standards are currently exceeded for the COPCs in the impacted media (Foster Wheeler Environmental, 2003). Alternative B-1 will not satisfy contaminant-specific ARARs. The No Action alternative also would not comply with action-specific ARARs for monitoring. No location-specific ARARs would be triggered by the No Action alternative.

Long-Term Effectiveness

The No Action alternative is not effective in the long term because it provides no long-term engineering or operational controls to prevent exposures to trespassers or workers at the site.

As required by CERCLA, review and evaluation of site conditions would be performed every five years. If justified by the review, additional remedial actions could be required. This alternative would not be effective over the long-term because contaminated building dust would remain on-site. The risks posed by contaminated media would not be mitigated.

Reduction of Toxicity, Mobility or Volume Through Treatment

This alternative would not involve any monitoring, removal, treatment, or disposal of the contaminants in the buildings and as such, no active reduction in toxicity, mobility, or volume of the contaminants would result due to treatment.

Short-Term Effectiveness

Under the No Action alternative, no short-term risks to remediation workers or the surrounding community and no significant impacts on public health and the environment will occur during implementation, since no remedial activities will be performed.

Implementability

Technical Feasibility

The technical feasibility of this alternative would be very high, since no remedial activities or monitoring would be performed.

Administrative Feasibility

This alternative would require administrative coordination in performing site reviews every five years. Coordination with state and local authorities may be required in the future for making decisions regarding future remedial activities, if any.

Availability of Services and Materials

No services or material would be required for this alternative.

Cost

There would be no costs associated with this alternative.

3.8 Alternative B-2: Decontamination and Surface Encapsulation

3.8.1 Description

In this alternative, surface decontamination is incorporated with surface encapsulation and institutional controls. A total of approximately 765,000 square feet will be addressed by this alternative. Alternative B-2 is formulated to address Remedial Action Objectives (RAOs) through application of 40 CFR 761.79 and 40 CFR 761.30(p). This authorization allows PCB-contaminated porous surfaces to be managed in-place for the remaining life of the surface provided that the conditions in the regulations are met.

Decontamination involves the removal of surface contamination from surfaces up to several centimeters in depth depending on the method used (*i.e.*, vacuum/pressure wash, acid etch, scarification and wipe/solvent wash). In many cases, extensive decontamination will be required to render buildings acceptable for future use. Surface encapsulation (e.g., epoxy coating) allows PCB-contaminated porous surfaces to be managed in place while it remains in service, provided that it is surface washed, encapsulated, and marked to indicate the presence of PCBs.

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This alternative would also include long-term sampling and monitoring to assess any changes in site conditions. Five-year reviews, as required by CERCLA, would also be performed to assess the need for future remedial actions. Public awareness programs would be implemented to inform the public and local officials about potential hazards posed by exposure to the contaminated buildings materials. In addition, a deed notice would be employed to ensure that any future site activities would be performed with knowledge of the site conditions and implementation of appropriate health and safety controls. (i.e., an Environmental Health & Safety (EHS) Plan)

3.8.2 Assessment

Overall Protection of Human Health and the Environment

The surface decontamination and encapsulation of contaminated buildings would minimize the potential human health and ecological risks associated with exposure to the contaminated buildings materials. This alternative would result in overall protection of human health and the environment. The protection would persist only as long as the containment measures were actively maintained, since contaminants would remain on-site, and a breach of containment measures could re-establish exposure routes. The mobility of hazardous contaminants would also be reduced.

Compliance with ARARs

This alternative would comply with all ARARs. Should the regulatory agencies determine that this alternative does not comply with the standards or requirements set forth by the regulations and waivers from the applicable requirements could be requested, as necessary. This alternative would comply with chemical-specific ARARs such as Toxic Substances Control Act (TSCA), since PCB contamination would be remediated per 40 CFR 761.79. Compliance with 40 CFR 761.30(p) would reduce direct contact risks.

Long-Term Effectiveness

The surface decontamination of contaminated buildings would reduce the potential human health risks associated with direct contact with contaminated buildings materials. Contaminated surfaces would be decontaminated as per 40 CFR 761.79 and encapsulated per 40 CFR 761.30(p).

Reduction of Toxicity, Mobility or Volume

Surface decontamination and encapsulation through application of 40 CFR 761.79 and 40 CFR 761.30(p) would result in a reduction of mobility) (through encapsulation), but no substantial reduction of toxicity or volume of contaminants.

Short-Term Effectiveness

The potential public health threats to workers and area residents would include direct contact with contaminated buildings materials and inhalation of building dust generated during remediation activities. The area would be secured and access would be restricted to authorized personnel only. Dust control measures would be used, as necessary, to minimize building dust emission resulting from remediation activities. Air monitoring would be conducted throughout the site remediation activities to ensure the nearby community is not exposed to site-related contamination.

The health and safety program will address the measures for protection against the principal threat hazards. The risk to workers would be minimized by the use of standard health and safety protection practices such as proper PPE to prevent direct contact with contaminated buildings or materials, and inhalation of building dust.

A total period of one year is estimated for this remedial alternative for planning, design, and procurement. Remedial activities associated with this alternative is expected to take an additional one to two years.

Implementability

Technical Feasibility

All the components of this alternative are well developed and commercially available. Sampling would also be required per 40 CFR 761.79.

Administrative Feasibility

Implementation of the alternative would require access restriction to the site during the remediation process. Contamination above ARARs would remain on-site and a deed notice would be required upon completion of the remedial activities. Record keeping would also be required per 40 CFR 761.79.

Availability of Services and Materials

Surface decontamination and encapsulation of building materials through application of 40 CFR 761.79 and 40 CFR 761.30(p) are well demonstrated and require conventional materials handling equipment. Numerous vendors are available for competitive bids.

Cost

The capital costs for this alternative would be approximately $11,000,000. This estimate does not include costs associated with the temporary relocation of existing tenants, including the removal of equipment, and any special handling of lead paint or asbestos. The annual maintenance cost would be approximately $230,000. The present worth calculated at a discount rate of 1 percent over a 30-year period would be approximately $17,000,000.

3.9 Alternative B-3: Demolition/Off-Site Disposal

3.9.1 Description

This alternative consists of the demolition of the on-site buildings. Approximately 22,000 tons of debris would be transported off-site for proper disposal. Since the debris is to be disposed off-site, it is anticipated that there would be no need for institutional controls, no five-year review requirement, and no long-term monitoring requirement. Debris designated for off-site disposal would be subjected to analysis for disposal parameters and transported off-site for treatment (as necessary) and disposal in accordance with applicable regulations. For development of this alternative, it was assumed that 20% of the generated debris is hazardous waste. During the remedial design, decontamination prior to demolition could be considered to reduce the quantity of hazardous waste. Non-contaminated building debris would be recycled to the extent practical.

Additionally, there were no lead paint or asbestos surveys performed during the RI. Lead or asbestos material will need to be managed in accordance with applicable regulations. Investigation may be required before demolition, if there is evidence of either.

3.9.2 Assessment

Overall Protection of Human Health and the Environment

The demolition and off-site disposal of building debris from the site would eliminate the potential human health and ecological risks associated with exposure. This alternative would result in overall protection of human health and the environment.

Compliance with ARARs

This alternative would comply with all ARARs. Should the regulatory agencies determine that this alternative does not comply with the standards or requirements set forth by the regulations, waivers from the applicable requirements could be requested, as necessary. Direct contact risks would be eliminated.

Long-Term Effectiveness

The demolition and removal of contaminated debris would provide a permanent solution to the contaminated buildings at the site. Off-site disposal of contaminated debris would eliminate the human health and ecological exposure risks.

Reduction of Toxicity, Mobility, or Volume

This alternative would result in total reduction of contaminant mobility and volume through removal and off-site disposal. There would be no reduction in contaminant toxicity if disposed at a landfill with no treatment. If necessary, the materials would be treated at the off-site facility prior to disposal.

Short-Term Effectiveness

The potential public health threats to workers and area residents would include direct contact with contaminated building surfaces and inhalation of fugitive dust generated during demolition. The area would be secured and access would be restricted to authorized personnel only. The implementation of standard dust control measures such as wind screens and water sprays would be used, as necessary, to minimize fugitive dust emission resulting from demolition. Air monitoring would be conducted throughout the site remediation activities to ensure the nearby community is not exposed to site-related contamination.

The health and safety program will address the measures for protection against the principal threat hazards. The risk to workers would be minimized by the use of standard health and safety protection practices such as enclosed cabs on equipment and proper PPE to prevent direct contact with contaminated material and inhalation of fugitive dust.

Short-term impacts to the environment would be due to potential fugitive emissions during handling of debris and increased traffic and noise, resulting from hauling debris. Wildlife displacement may occur during remediation activities; however, this would be temporary and any displaced species would be expected to return after completion of site activities.

A total period of one to two years is estimated for this remedial alternative for planning, design, and procurement. Construction work associated with this alternative is expected to take an additional year.

<u>Implementability</u>

Technical Feasibility

All the components of this remedial alternative are well developed and commercially available. The large volumes of debris designated for off-site disposal may require identification of multiple disposal facilities. However, sufficient area is available at the site for staging wastes. Demolition, off-site transportation, and restoration of the site can be performed with little difficulty.

Administrative Feasibility

Implementation of this alternative would require access restriction to the site during the remediation process. Since contaminated material is disposed off-site, contamination would not remain on-site and a deed notice would not be required upon completion of the remedial activities.

Availability of Services and Materials

This alternative uses common construction equipment, and implementation should not pose any problems. The large volume of material may require the identification of multiple disposal facilities. Lead and/or asbestos mitigation contractors are available.

<u>Cost</u>

The total capital cost for this alternative is estimated to be $4,000,000. There is no O&M cost associated with this alternative, and the capital cost does not include lead or asbestos mitigation. It assumes off-site disposal debris that is 20% hazardous and 80% non-hazardous.

4.0 COMPARATIVE ANALYSIS OF REMEDIAL ALTERNATIVES

This section presents a comparison of the relative performance of each remedial alternative using the specific evaluation criteria presented below. The comparative analysis was performed in a qualitative manner, to identify substantive differences between the alternatives. As with the detailed evaluation, the following criteria were used for the comparative analysis:

- Overall protection of human health and the environment
- Compliance with ARARs
- Long-term effectiveness
- Reduction of toxicity, mobility, or volume through treatment
- Short-term effectiveness
- Implementability
- Cost

The comparative analysis is summarized in Tables 4-1a and 4-1b.

5.0 REFERENCES

Foster Wheeler Environmental, 2003, "Remedial Alternative Screening Technical Memorandum for Operable Unit 2 (OU-2) On-Site Soils and Buildings," Cornell-Dubilier Electronics Superfund Site; Middlesex County, New Jersey, January 2003.

Foster Wheeler Environmental, 2002, "Remedial Investigation Report for Operable Unit 2 (OU-2) On-Site Soils and Buildings," Cornell-Dubilier Electronics Superfund Site; Middlesex County, New Jersey, December 2002.

U.S. Environmental Protection Agency, 1988, "Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA," Office of Emergency and Remedial Response, Washington, DC, (Interim Final).

U.S. Environmental Protection Agency, 1985, "Revised Handbook for Remedial Action at Waste Disposal Sites," Office of Emergency and Remedial Response, Washington DC.

TABLE 4-1a (Sheet 1 of 5)

COMPARATIVE ANALYSIS OF ALTERNATIVES FOR SOILS

CRITERIA	Alternative S-1 No Action	Alternative S-2 Excavation/ Off-Site Disposal	Alternative S-3 "Principal Threat" Excavation/Off-Site Disposal/Multi-Layer Cap	Alternative S-4 SVE/Multi-Layer Cap	Alternative S-5 Solidification/ Multi-Layer Cap	Alternative S-6 Low Temperature Thermal Desorption/ Multi-Layer Cap
Description	No remedial actions. 5-year reviews.	Excavation and off-site disposal of contaminated soils that exceed IGWSCC or NRDCSCC, and PCBs > 10 ppm. In addition, the capacitor disposal areas would be excavated and disposed off-site.	Excavation and off-site disposal of contaminated soils that exceed IGWSCC, and PCBs > 500 ppm. Remaining contaminated soils would be placed under a multi-layer cap. In addition, the capacitor disposal areas would be excavated and disposed off-site.	Treatment of VOCs > IGWSCC by SVE, remaining contaminated soils would be placed under a multi-layer cap. In addition, the capacitor disposal areas would be excavated and disposed off-site.	Solidification of soils that exceed IGWSCC, and PCBs > 500 ppm. Remaining contaminated soils would be placed under a multi-layer cap. In addition, the capacitor disposal areas would be excavated and disposed off-site.	LTTD of soils that exceed PCBs > 500 ppm. IGWSCC. Remaining contaminated soils would be placed under a multi-layer cap. In addition, the capacitor disposal areas would be excavated and disposed off-site.
1. Overall Protection of Human Health and the Environment	Not protective of human health or the environment.	Excavation would minimize the potential human health and ecological risks. However, residual risks from PCB concentrations would remain.	Less protective than S-2 since contaminated soil (i.e., PCBs < 500 ppm) and/or > NRDCSCC) would still remain on-site. Exposure to contamination would be minimized by cap.	Less protective than S-3 since more highly contaminated soil (PCBs > 500 ppm) will remain. Exposure to contamination would be minimized by cap.	Residual contamination > S-4, since no contamination is removed, but higher mobility reduction through solidification. Exposure to contamination would be minimized by cap.	Less residual contamination than S-4 or S-5; exposure to contamination would be minimized by cap.
2. Compliance with ARARs						
• Compliance with Contaminant-Specific ARARs	No contaminant-specific ARARs would be achieved.	Would be performed in complete compliance with contaminant-specific ARARs; however, NRDCSCC and EPA SSL for PCBs would not be achieved.	Would not comply with NRDCSCC, IGWSCC for PCBs, and EPA SSL for PCBs.	Would not comply with IGWSCC, NRDCSCC, and EPA SSL.	Same as S-3.	Same as S-3.
• Compliance with Action-Specific ARARs	Would not comply with action-specific ARARs.	Would be performed in compliance with action-specific ARARs.	Same as S-2.	Same as S-2.	Same as S-2.	Same as S-2.
• Compliance with Location-Specific ARARs	No location-specific ARARs triggered.	Would be performed in compliance with location-specific ARARs.	Same as S-2.	Same as S-2.	Same as S-2.	Same as S-2.

TABLE 4-1a (Sheet 2 of 5)

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COMPARATIVE ANALYSIS OF ALTERNATIVES FOR SOILS

CRITERIA	Alternative S-1 No Action	Alternative S-2 Excavation/ Off-Site Disposal	Alternative S-3 "Principal Threat" Excavation/Off-Site Disposal/Multi-Layer Cap	Alternative S-4 SVE/Multi-Layer Cap	Alternative S-5 Solidification/ Multi-Layer Cap	Alternative S-6 Low Temperature Thermal Desorption/ Multi-Layer Cap
3. <u>Long-Term Effectiveness</u>						
• Magnitude of Residual Risks	No immediate reduction in baseline risk. Risk would potentially be reduced over time through natural attenuation processes.	Substantial risk reduction by excavation and off-site disposal. PCBs < 10 ppm would remain.	Residual risk reduced by excavation and off-site disposal; contaminated soil remains on-site under multi-layer cap.	Residual risk reduced by SVE; contaminated soil remains on-site under multi-layer cap.	Residual risk reduced by solidification; contaminated soil remains on-site under multi-layer cap.	Residual risk reduced by LTTD; contaminated soil remains on-site under multi-layer cap.
• Adequacy of Controls	No controls implemented.	No controls required after soil removal.	Multi-layer cap mitigates risk of exposure to remaining contaminated soil on-site.	Same as S-3.	Same as S-3.	Same as S-3.
• Reliability of Controls	No controls implemented.	Not applicable.	Multi-layer cap requires maintenance to ensure integrity; breach of the cap and re-establishment of exposure routes is possible.	Same as S-3.	Same as S-3.	Same as S-3.
4. <u>Reduction of Toxicity, Mobility or Volume</u>						
• Treatment Process and Remedy	None	Excavation and off-site disposal of contaminated soils including capacitor disposal area.	Excavation and off-site disposal of contaminated soil including capacitor disposal area in conjunction with a multi-layer cap.	SVE and excavation of capacitor disposal area in conjunction with a multi-layer cap.	Either *in situ* or *ex situ* solidification including excavation of capacitor disposal areas conjunction with multi-layer cap.	LTTD and excavation of capacitor disposal area in conjunction with a multi-layer cap.
• Amount of Hazardous Material Destroyed or Treated	None	An estimated 300,000 cubic yards of contaminated soil and debris.	An estimated 152,000 cubic yards of contaminated soil and debris.	VOCs removed from 152,000 cubic yards of soil. Estimated 7,500 cubic yards of contaminated soil and debris from the capacitor area.	Same as S-3.	Same as S-3.

TABLE 4-1a (Sheet 3 of 5)

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COMPARATIVE ANALYSIS OF ALTERNATIVES FOR SOILS

CRITERIA	Alternative S-1 No Action	Alternative S-2 Excavation/ Off-Site Disposal	Alternative S-3 "Principal Threat" Excavation/Off-Site Disposal/Multi-Layer Cap	Alternative S-4 SVE/Multi-Layer Cap	Alternative S-5 Solidification/ Multi-Layer Cap	Alternative S-6 Low Temperature Thermal Desorption/ Multi-Layer Cap
• Reduction of Toxicity, Mobility or Volume	No reduction of toxicity mobility or volume except by natural attenuation processes.	Significant reduction in toxicity, mobility and volume of contaminants as a result of removal from the site.	Same as S-2 for excavated areas. Capped areas show reduced mobility, but no decrease in volume or toxicity.	Some reduction in toxicity, mobility, and volume in areas of excavation and SVE system. Capped areas show reduced mobility, but no decrease in volume or toxicity.	Some reduction in mobility due to solidification. Capped areas show reduced mobility, but no decrease in volume or toxicity.	Some reduction in toxicity, mobility, and volume in areas where soil is treated. Capped areas show reduced mobility, but no decrease in volume or toxicity.
• Irreversibility of Treatment	No treatment. Natural attenuation is irreversible.	Soil removal from the site is irreversible.	Same as S-2 for excavated material.	Same as S-2 for excavated material. VOC removal is irreversible.	Same as S-2 for excavated material. Solidified material could degrade.	Same as S-2 for excavated material. LTTD is irreversible.
• Type and Quantity of Residual Waste	No residual waste, since no treatment involved.	None, since no waste treated. However, soil may be treated off-site.	Same as S-2.	Off-gas from SVE system.	Same as S-2.	Off-gas from LTTD process.
5. Short-Term Effectiveness						
• Protection of Community During Remedial Activities	No short term risk to community.	Short-term risks to the community from migration of contaminated dust will be controlled by dust control measures. Site access will be restricted.	Same as S-2 but less disturbance due to smaller excavation volume.	Same as S-3. Off-gas needs to be treated.	Same as S-3.	Same as S-3. Off-gases need treatment.
• Protection of Workers During Remediation	No remediation, therefore not applicable.	Short-term risks to remediation workers will be controlled by health and safety program. Dust control measures will be implemented with air monitoring.	Same as S-2.	Same as S-2.	Same as S-2.	Same as S-2.

400076

COMPARATIVE ANALYSIS OF ALTERNATIVES FOR SOILS

CRITERIA	Alternative S-1 No Action	Alternative S-2 Excavation/ Off-Site Disposal	Alternative S-3 "Principal Threat" Excavation/Off-Site Disposal/Multi-Layer Cap	Alternative S-4 SVE/Multi-Layer Cap	Alternative S-5 Solidification/ Multi-Layer Cap	Alternative S-6 Low Temperature Thermal Desorption/ Multi-Layer Cap
• Environmental Impacts	Potential exposure to contaminated soil.	Wildlife displacement may occur due to remedial construction activities. Expected to return at completion of activities.	Same as S-2.	Same as S-2.	Same as S-2.	Same as S-2.
• Time Until Protection is Achieved	No time required for implementation of No Action. Protection not achieved.	Time required for imple-mentation is estimated to be one to two years. Time required for remediation is estimated to be an additional two years.	Same as S-2.	Same as S-2.	Same as S-2.	Same as S-2.
6. <u>Implementability</u>						
Technical Feasibility						
• Ability to Construct and Operate Technology	No construction involved.	Conventional construction equipment used.	Same as S-2	Same as S-2. SVE is established technology.	Same as S-2. *In situ* and *ex situ* solidification techniques are established technologies.	Same as S-2. Requires LTTD unit(s).
• Reliability of Technology	Does not involve any technology.	Conventional equipment and techniques. Very reliable.	Same as S-2.	Same as S-2. SVE is a proven technology.	Same as S-2. Solidification is a proven technology.	Same as S-2. LTTD is a proven technology.
• Ease of Undertaking Additional Remedial Action if Necessary	If future action is necessary, must go through the FS/ROD process again.	None required.	Would need to disturb multi-layer cap.	Same as S-3.	Same as S-3.	Same as S-3.
• Monitoring Consideration	No monitoring program.	No monitoring program.	Requires monitoring the integrity of multi-layer cap.	Same as S-3 and monitoring of SVE system.	Same as S-3.	Same as S-3 and monitoring of LTTD system.

TABLE 4-1a (Sheet 5 of 5)

COMPARATIVE ANALYSIS OF ALTERNATIVES FOR SOILS

CRITERIA	Alternative S-1 No Action	Alternative S-2 Excavation/ Off-Site Disposal	Alternative S-3 "Principal Threat" Excavation/Off-Site Disposal/Multi-Layer Cap	Alternative S-4 SVE/Multi-Layer Cap	Alternative S-5 Solidification/ Multi-Layer Cap	Alternative S-6 Low Temperature Thermal Desorption/ Multi-Layer Cap
Administrative Feasibility						
• Coordination with Other Agencies	None required.	Significant coordination with regulatory agencies, tenants, and property owners.	Same as S-2 plus long-term O&M and deed notice.	Same as S-2 plus long-term O&M and deed notice.	Same as S-2 plus long-term O&M and deed notice.	Same as S-2 plus long-term O&M and deed notice.
Availability of Services and Materials						
• Availability of Treatment Capacity and Disposal Services	None required.	Approved off-site disposal facilities is available. Multiple facilities may be required to handle large volumes of soil.	Same as S-2. Less volume than S-2.	Off-gas from SVE system treated on-site. Material from capacitor disposal area can be disposed off-site.	No significant quantities for off-site disposal. Material from capacitor disposal area can be disposed off-site.	Off-gases from LTTD system treated on-site. Material from capacitor disposal area can be disposed off-site.
• Availability of Necessary Equipment and Specialist	No equipment or specialist needed.	Utilizes common construction equipment and materials.	Same as S-2.	Same as S-2.	Same as S-2.	Same as S-2.
• Availability of Technologies	No technology required.	Utilizes common construction techniques and methods.	Same as S-2.	Same as S-2. SVE systems are widely available.	Same as S-2.	Same as S-2. LTTD units available commercially.
7. <u>Costs</u>						
• Total Capital Cost ($)	• $0	• $131,000,000	• $88,000,000	• $35,000,000	• $37,000,000	• $104,000,000
• Annual Operation and Maintenance Cost ($/yr)	• $0	• $0	• $640,000	• $640,000	• $640,000	• $640,000
• Present Worth $ (30 year, 1% Basis)	• $0	• $131,000,000	• $104,000,000	• $52,000,000	• $53,000,000	• $121,000,000

TABLE 4-1b (Sheet 1 of 3)

400078

COMPARATIVE ANALYSIS OF ALTERNATIVES FOR BUILDINGS

CRITERIA	Alternative B-1 No Action	Alternative B-2 Decontamination and Surface Encapsulation	Alternative B-3 Demolition/Off-Site Disposal
Description	No remedial actions. 5-year reviews.	Building surfaces would be decontaminated as per 40 CFR 761.79 and encapsulated per 40 CFR 761.30 (p).	This alternative consists of the demolition of the contaminated buildings. Additionally, a lead and/or asbestos abatement will be performed, if necessary.
1. Overall Protection of Human Health and the Environment	Not protective of human health or the environment.	Less than B-3; contamination will remain, mobility reduced by encapsulation.	Demolition would eliminate the potential human health risk. Contaminated building debris would be removed from the site, thereby providing protection against direct contact. Recycling of non-contaminated debris would be protective provided that the waste was properly characterized and/or decontaminated. This alternative would result in overall protection of human health and the environment.
2. Compliance with ARARs			
• Compliance with Contaminant-Specific ARARs	No contaminant-specific ARARs would be achieved.	Would be performed in compliance with contaminant-specific ARAR.	Same as B-2.
• Compliance with Action-Specific ARARs	Would not comply with action-specific ARARs.	Would be performed in compliance with action-specific ARARs.	Same as B-2.
• Compliance with Location-Specific ARARs	No location-specific ARARs triggered.	Would be performed in compliance with location-specific ARARs.	Same as B-2.
3. Long-Term Effectiveness			
• Magnitude of Residual Risks	No reduction in risk.	Residual risk is reduced, but contamination remain on-site	Residual risk is removed with the demolition of the buildings.
• Adequacy of Controls	No controls implemented.	Encapsulation mitigates the risk of exposure to contaminated building materials.	No controls required after building demolition.
• Reliability of Controls	No controls implemented.	Encapsulation requires maintenance to ensure integrity; re-establishment of exposure routes is possible.	Minimizes potential for contamination migration. Effective long-term remedy that permanently removes contaminated building material and either disposes contaminated debris off-site or recycles non-contaminated material.

400079

TABLE 4-1b (Sheet 2 of 3)

COMPARATIVE ANALYSIS OF ALTERNATIVES FOR BUILDINGS

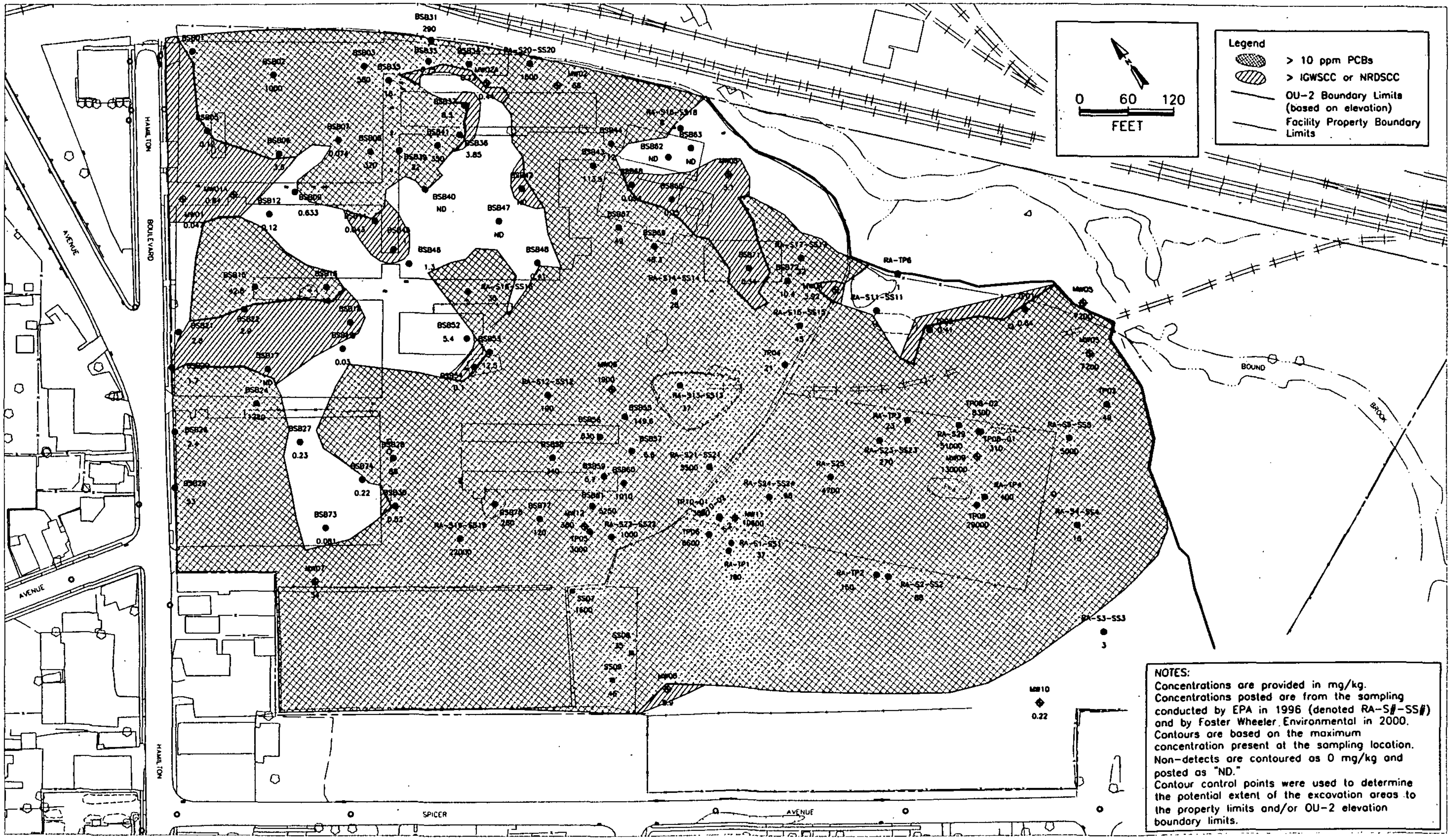
CRITERIA	Alternative B-1 No Action	Alternative B-2 Decontamination and Surface Encapsulation	Alternative B-3 Demolition/Off-Site Disposal
4. Reduction of Toxicity, Mobility or Volume			
• Treatment Process and Remedy	None.	Reduction in volume and mobility of contaminants through decontamination and encapsulation, respectively.	Demolition and off-site disposal of building demolition debris.
• Amount of Hazardous Material Destroyed or Treated	None.	18 buildings, approximately 765,000 sq. ft. No remedial activities are anticipated for building exteriors.	Estimated 22,000 tons of building demolition debris.
• Reduction of Toxicity, Mobility or Volume	No reduction of toxicity, mobility, or volume of contamination.	Decrease in toxicity, mobility, and volume due to decontamination and subsequent encapsulation.	Significant reduction in toxicity, mobility, and volume through removal.
• Irreversibility of Treatment	No treatment.	Coating used in encapsulation may degrade over time or through wear.	Contaminated building debris removal from the site is irreversible.
• Type and Quantity of Residual Waste	No residual waste, since no treatment involved.	PCB dust from building surface decontamination.	Building demolition debris.
5. Short-Term Effectiveness			
• Protection of Community During Remedial Activities	No short-term risk to the community.	Short-term risks to the community from migration of contaminated dust will be controlled by standard dust suppression techniques with air monitoring, and site access restricted.	Same as B-2.
• Protection of Workers During Remediation	No remediation, therefore not applicable.	Short-term risks to remediation workers will be controlled by the health and safety program, including dust control measures and air monitoring.	Same as B-2.
• Environmental Impacts	No sensitive environs in building area.	No environmental impacts are anticipated. No sensitive environs in building area.	Same as B-2.
• Time Until Protection is Achieved	No time required for implementation of No Action. Protection not achieved.	Time required for implementation is estimated to be one year. Time required for remediation is estimated to be an additional one to two years.	Time required for implementation is estimated to be one to two years. Time required for remediation is estimated to be an additional year.

TABLE 4-1b (Sheet 3 of 3)

COMPARATIVE ANALYSIS OF ALTERNATIVES FOR BUILDINGS

CRITERIA	Alternative B-1 No Action	Alternative B-2 Decontamination and Surface Encapsulation	Alternative B-3 Demolition/Off-Site Disposal
6. Implementability			
Technical Feasibility			
• Ability to Construct and Operate Technology	No construction involved.	Readily implemented using standard construction equipment.	Same as B-2
• Reliability of Technology	Does not involve any technology.	Encapsulation can fail or degrade.	Contamination removed.
• Ease of Undertaking Additional Remedial Action if necessary	If future action is necessary, must go through the FS/ROD process again.	If encapsulation fails or degrades, surfaces will be re-sealed.	No additional action required.
• Monitoring Consideration	No monitoring program.	Requires long-term monitoring of encapsulated surfaces.	No long-term monitoring
Administrative Feasibility			
• Coordination with Other Agencies	None required.	Requires coordination with regulatory agencies, tenants and property owners, plus long-term O&M and potential use restrictions.	Requires coordination with regulatory agencies, tenants, and property owners.
Availability of Services and Materials			
• Availability of Treatment Capacity and Disposal Services	None required.	Collected building dust would be disposed of off-site.	Approved off-site disposal facilities are available. Large volumes of construction debris may require identification of multiple facilities. Non-contaminated building debris may be recycled.
• Availability of Necessary Equipment and Specialist	No equipment or specialist needed.	Utilizes common construction equipment and materials.	Same as B-2.
• Availability of Technologies	No technology required.	Utilizes common construction techniques and methods.	Same as B-2.
7. Costs			
• Total Capital Cost ($)	• $0	• $11,000,000	• $4,000,000
• Annual Operation and Maintenance Cost ($/yr)	• $0	• $230,000	• $0
• Present Worth $ (30 year, 1% Basis)	• $0	• $17,000,000	• $4,000,000

FIGURES



400082

FOSTER WHEELER ENVIRONMENTAL CORPORATION	TITLE: Alternative S-2; Extent of PCBs >10 ppm & Other COPCs >IGWSCC or NRDSCC Cornell-Dubilier Electronics Superfund Site Operable Unit 2 (OU-2) On-Site Soils and Buildings	DWN.: LEN	DATE: 03/06/03	PROJECT NO.: 1945.1018
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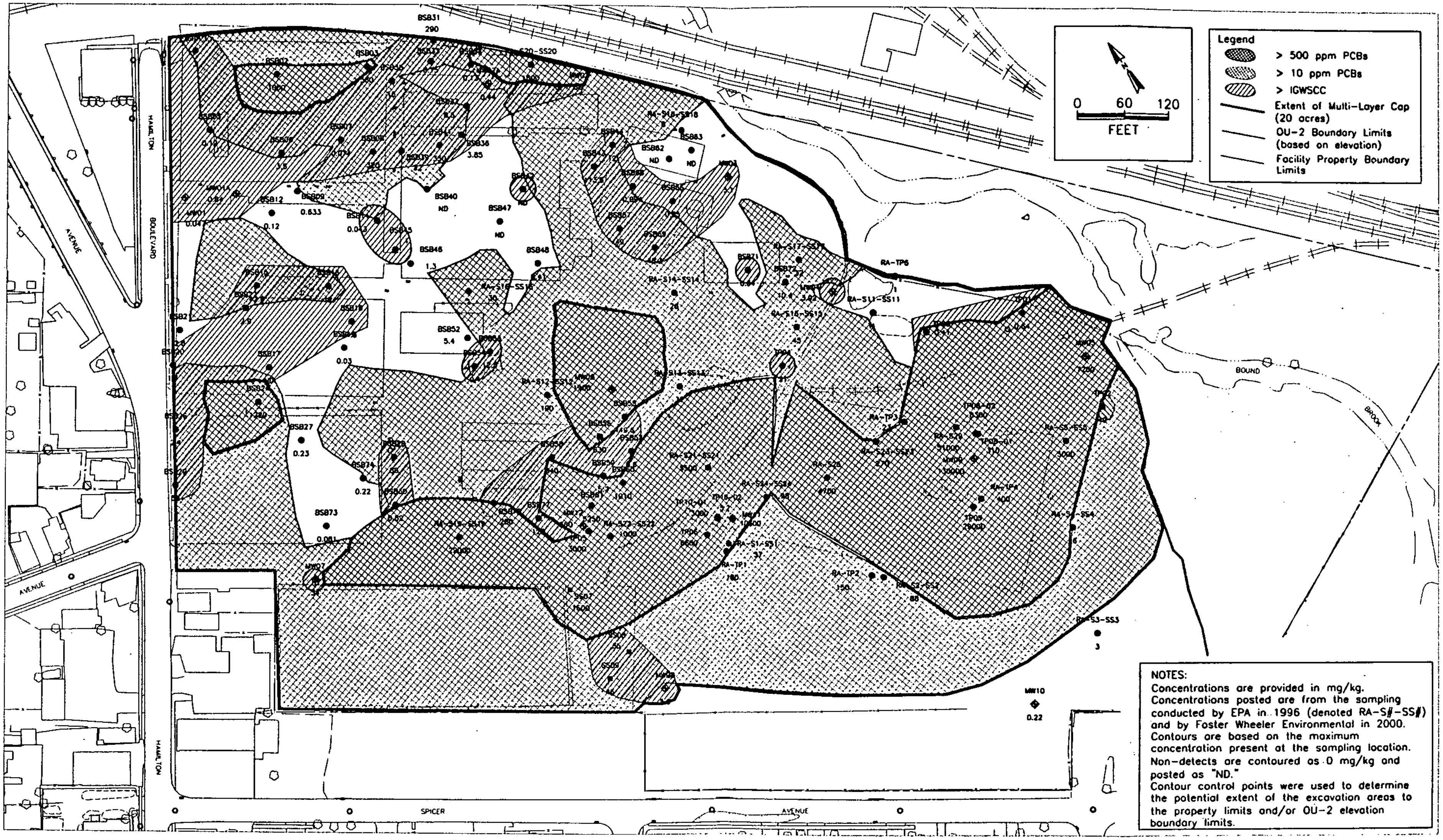
		DES.: LEN	APPD: RC	



400083

FOSTER WHEELER ENVIRONMENTAL CORPORATION

TITLE:	DWN.: LEN	DATE: 03/06/03	PROJECT NO.: 1945.1018
Alternatives S-3, S-4, S-5, & S-6; Extent of PCBs >500 ppm & Other COPCs >IGWSCC Cornell-Dubilier Electronics Superfund Site Operable Unit 2 (OU-2) On-Site Soils and Buildings	CHKD.: BMS	REV.: 0	FIGURE NO.: 3-2
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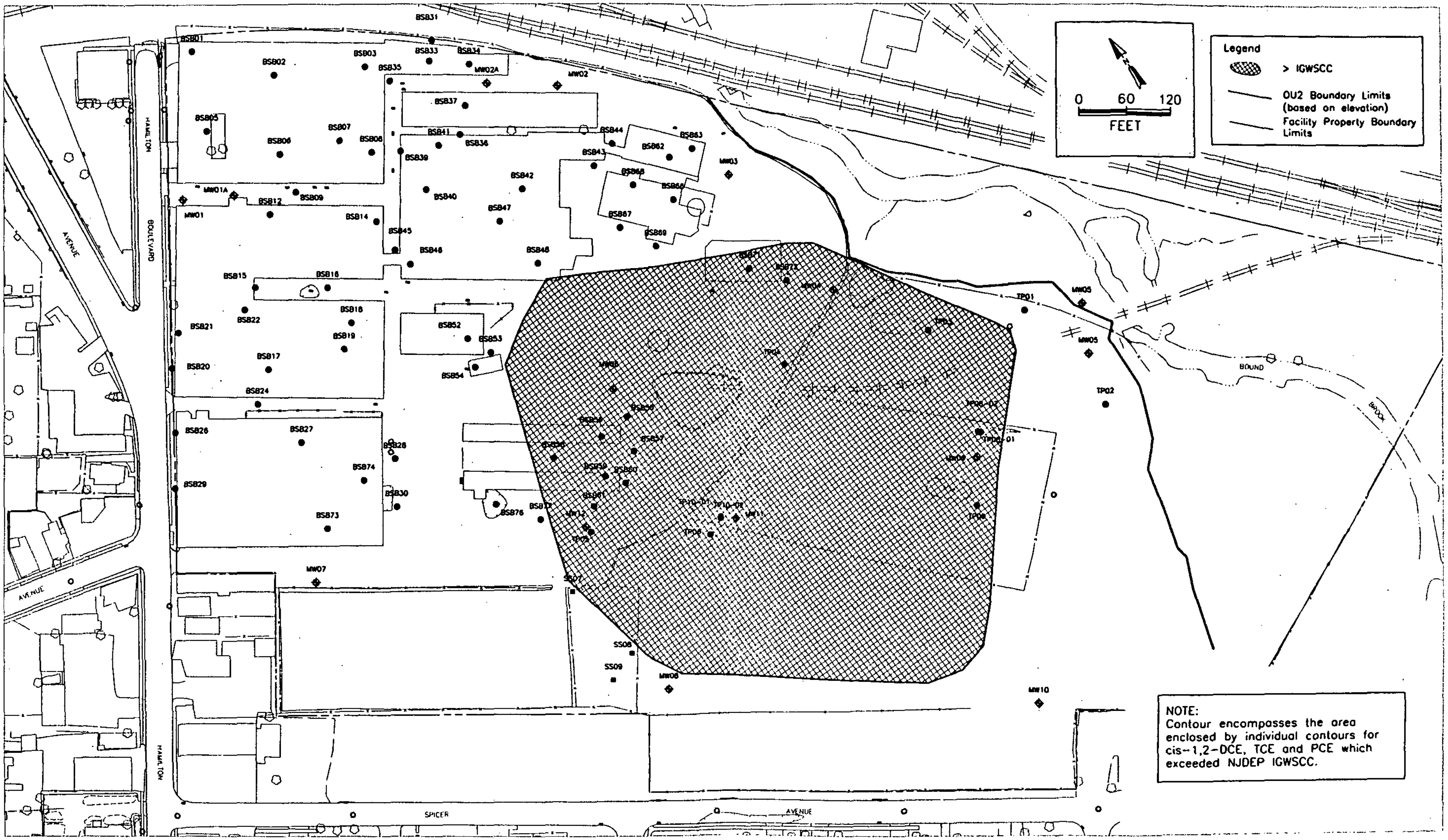

FOSTER WHEELER ENVIRONMENTAL CORPORATION

TITLE: Alternative S-4; Extent of VOCs > IGWSCC
Cornell-Dubilier Electronics Superfund Site
Operable Unit 2 (OU-2) On-Site Soils and Buildings

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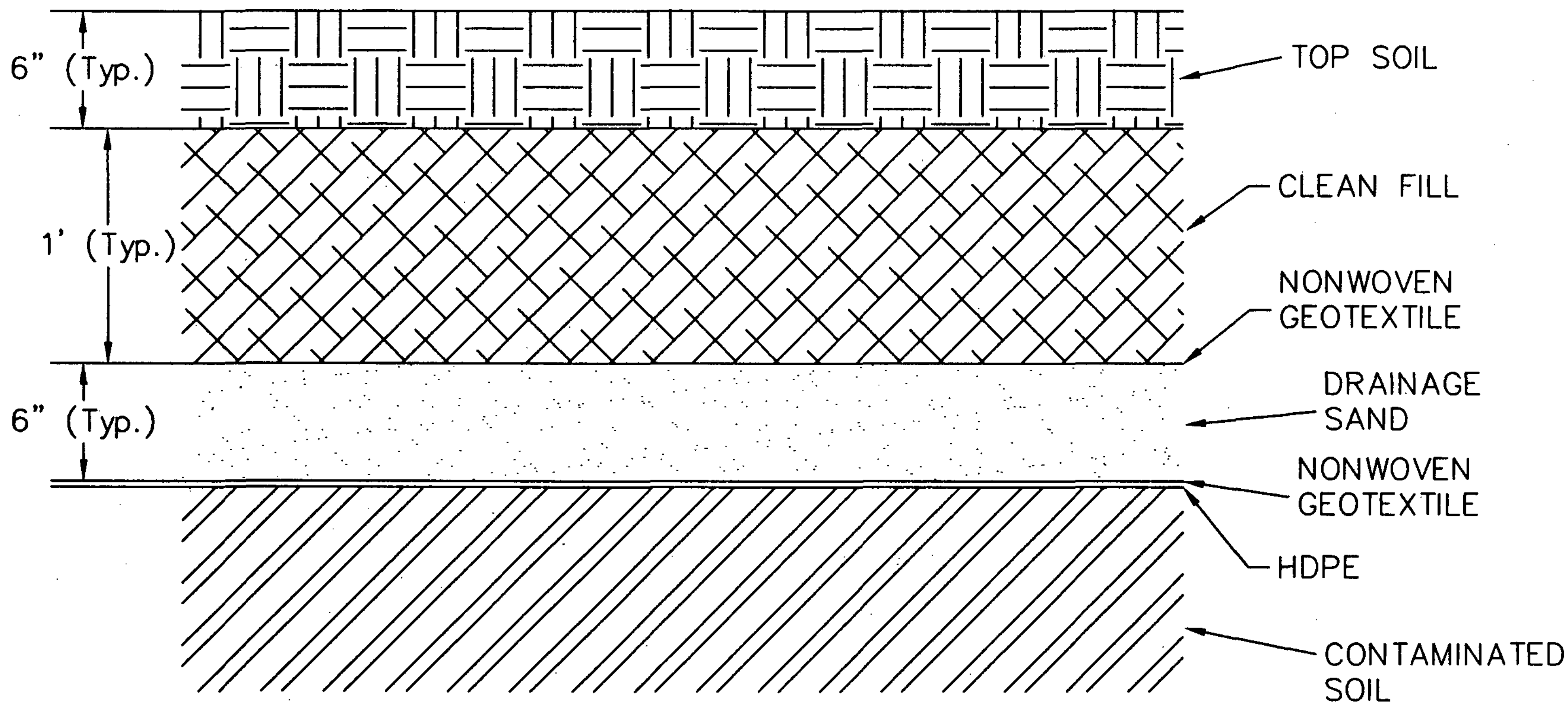
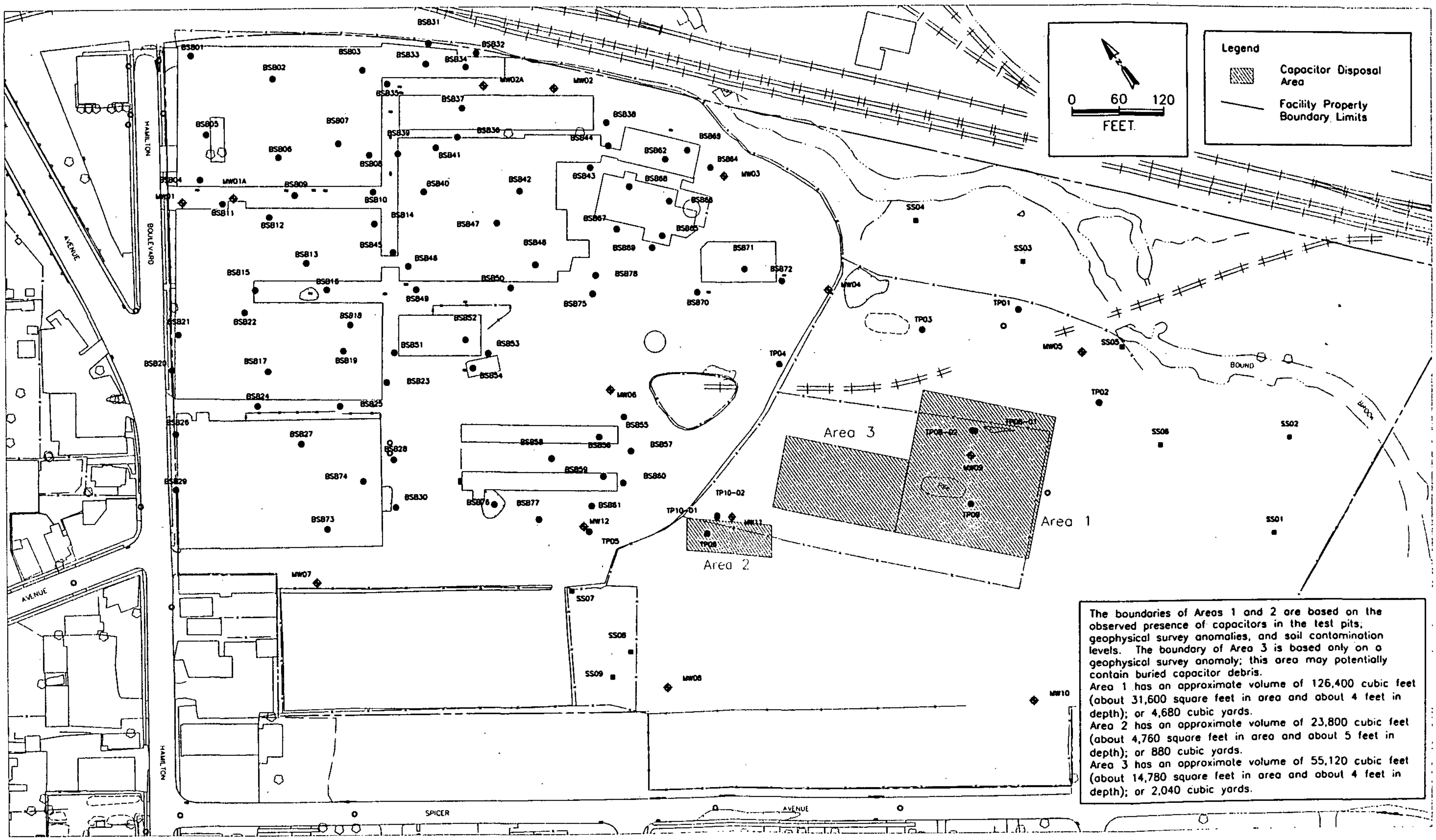
CHKD: BMS	REV.: 0	FIGURE NO.: 3-3
DES.: LEN	APPD: RC	

400084



NOT TO SCALE

FOSTER WHEELER ENVIRONMENTAL CORPORATION	TITLE: Typical Cross-Section of Multi-Layer Cap Cornell-Dubilier Electronics Superfund Site Operable Unit 2 (OU-2) On-Site Soils and Buildings	DWN: CTS CHKD: KB DATE: 04/28/03	DES.: BMS APPD: RC REV.: 1	PROJECT NO.: 1945.1018 FIGURE NO.: 3-4



FOSTER WHEELER ENVIRONMENTAL CORPORATION

TITLE:
Areas of Potentially Buried Capacitor Debris
Cornell-Dubilier Electronics Superfund Site
Operable Unit 2 (OU-2) On-Site Soils and Buildings

DWN.: LEN	DATE: 02/12/03	PROJECT NO.: 1945.1018
CHKD: BMS	REV.: 0	FIGURE NO.: 3-5
DES.: LEN	APPD: RC	

400086

FOSTER WHEELER

FOSTER WHEELER ENVIRONMENTAL CORPORATION